L1CFT-L1MU Commissioning

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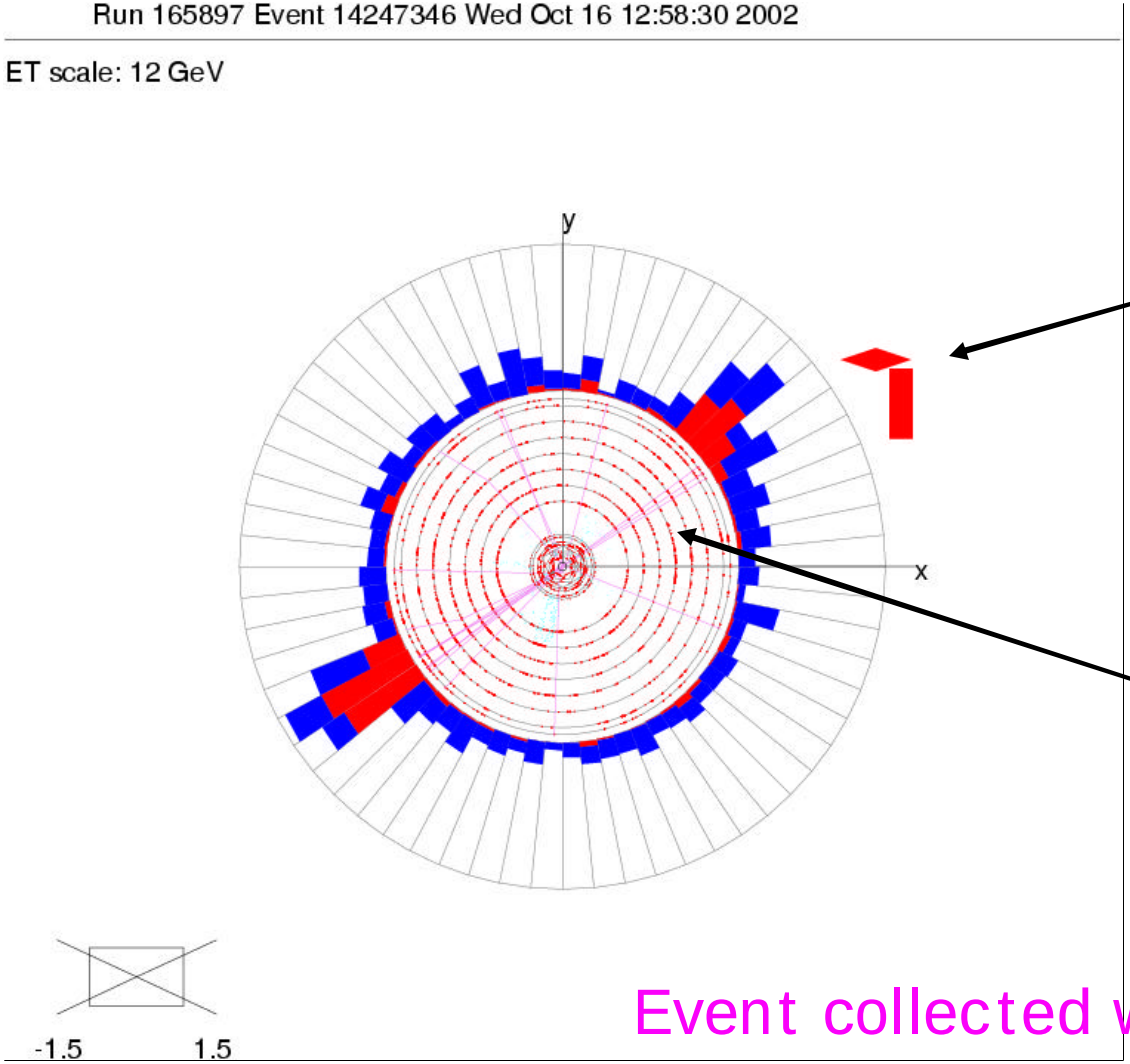
Status

- All central L1CFT-L1MU cables tested
  - One problem xmitter on sector 69
  - ~6/388 suspect splitter -> MTCxx
- Small amount of data collected with L1CFT.L1MU trigger
  - Good results seen in event displays
- GUI's constructed to easily allow shifters to disable all/some of the L1CFT inputs
- DD/AS OK'd two stores of running with L1CFT inputs enabled
  - Ran all owl shift last night with no problems, will run again tonight
  - Important because we want to see if there are any gross L1CFT input problems during typical store
- Central and forward L1CFT.L1MU FPGA logic ready to go (but possibly not optimized)
  - Need central bottom

L1CFT.Scintillator Commissioning

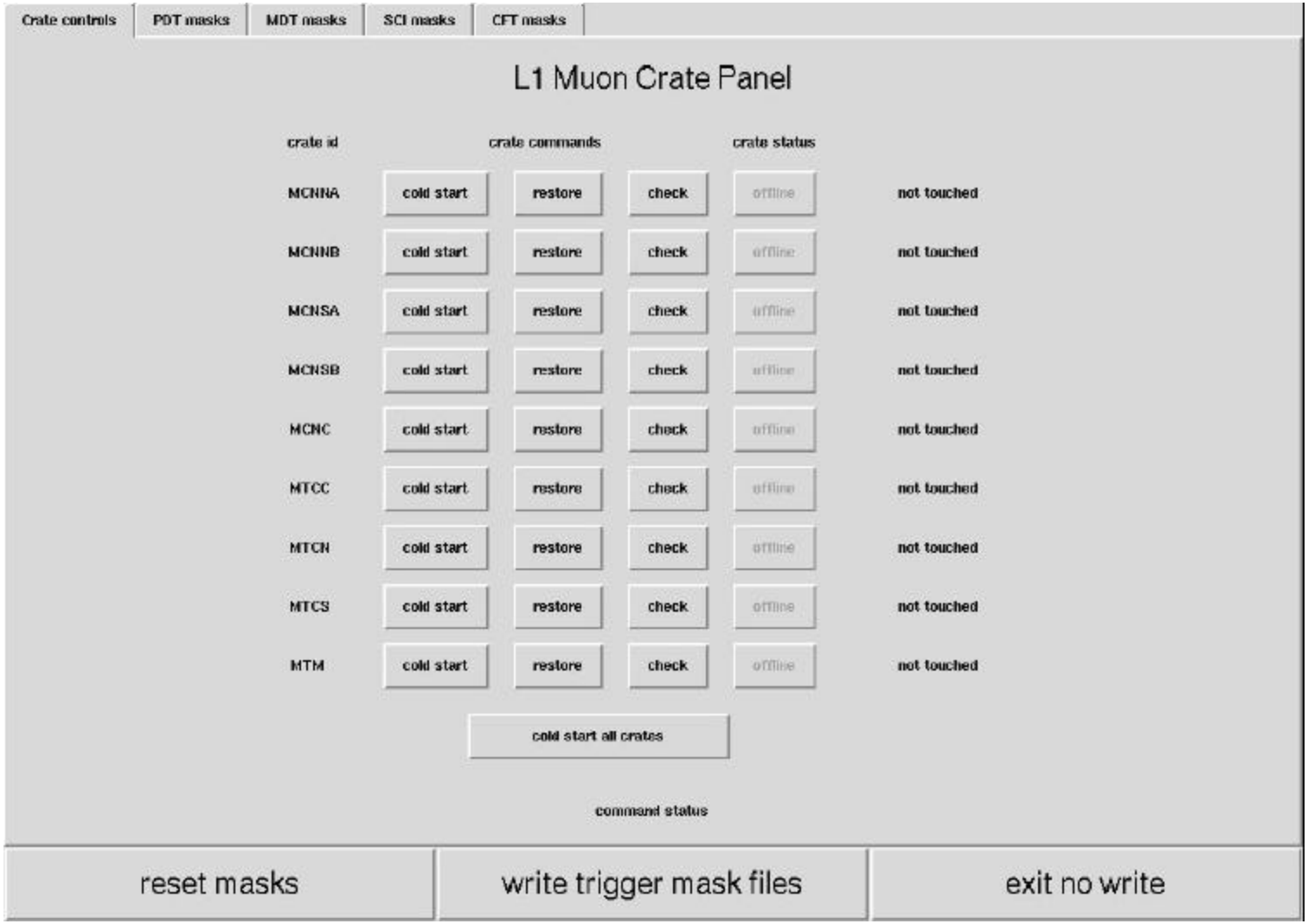


Muon scintillator hits

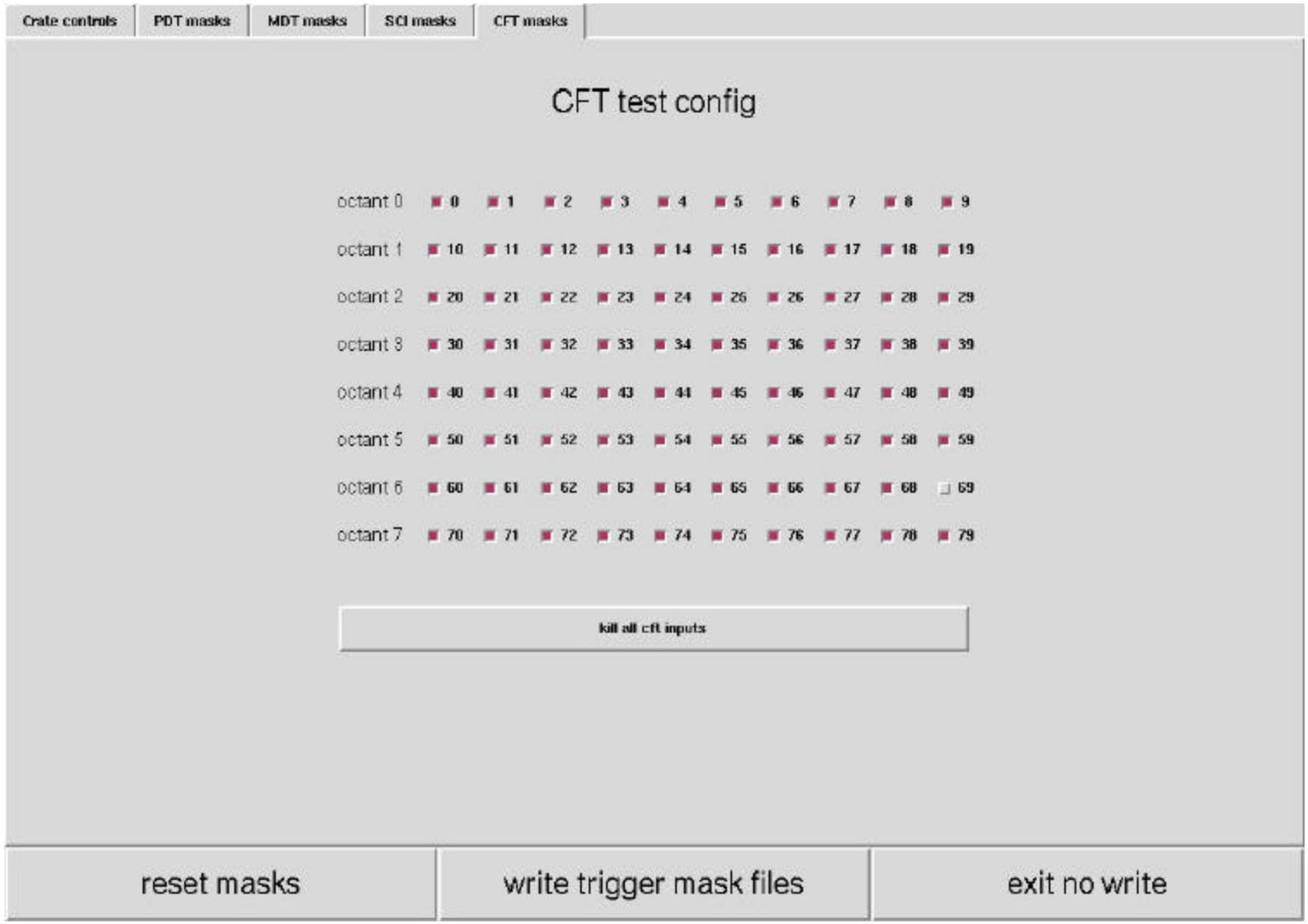
High P_T tracks from L1CFT

Event collected with mu1pt1clxx

Shifter GUI (Crate Reload)



Shifter GUI (L1CFT Input Disable)



L1CFT-L1MU Certification Plan

- These are the same tasks that we have followed in certifying scintillator and wire triggers
- Important for Lipton et al to press DØ management to allow L1CFT inputs to be enabled during stores
  - Probably some loss of data-taking efficiency but increases rate of progress in L1CFT-L1MU certification
- Stefan Anderson (postdoc) slated to lead this effort
  - With help from Rob, Noah, Jeff, KJ

L1CFT-L1MU Certification Plan

- Produce MC efficiencies for L1CFT.L1MU triggers
  - Waiting for p13.03 geometry
  - Eventually we will rewrite this section of tsim_l1muo to make it more RCP-based
- Produce data efficiencies and purity for L1CFT.L1MU triggers
  - Eff == L1MU trigger/Reco muon for jet triggers
  - Root-tuple analysis code ready to go
  - TMB analysis code must wait for p13.04 (or later) when trigger chunk is included (Kyle Stevenson)

L1CFT-L1MU Certification Plan

- **Measure L1CFT.L1MU rates and rejections**
  - Easily done if L1CFT inputs enabled
  - Also measure rates for each sector and each octant
  - Trigger Rate (Hz)
    +++++++++ +++++++++
    pt1 loose 350
    pt2 loose 45
    pt3 loose 10
    pt4 loose 2
    pt2 tight 3
    pt3 tight 1
    pt4 tight 0.2
    pt4 only 65

- **Collect nice event displays with L1CFT.L1MU trigger**
  - Impress your colleagues
  - More importantly, study events to optimize trigger (improve efficiency and/or rejection)

L1CFT-L1MU Certification Plan

- Hardware-Simulator comparisons
  - Compare hardware result with raw data run through tsim_l1muo result
  - Running tsim_l1l2 (p13.02) online
  - Track down discrepancies (but for scintillator and wire triggers there was >90% agreement from the start)
- Complete L1CFT-L1MU cable repairs

Conclusions

- L1CFT.L1MU commissioning plan is the same one we followed in successfully commissioning scintillator and wire triggers
- Can proceed once L1CFT inputs are enabled
  - Help from CFT shifters to monitor? I.e., checking for good synch gap at DFEA via DFE_Ware
  - SCL Inits after CFT downloads (to re-synch inputs at L1Muo)
- Data analysis using TMB must be developed
  - Increase commissioning time